



REGIONE AUTÓNOMA DE SARDIGNA  
REGIONE AUTONOMA DELLA SARDEGNA



NAWAMED

# Designing Urban Nature Based Solutions for Greywater Reuse

E-Technical Workshop  
(e-TWS)

From  
**1 to 8 March 2021**

**Online**  
Language: ENGLISH

**1 March** / public event

**Designing urban nature-based solutions for greywater reuse**

**2 March - 8 March**

**Working groups on real case studies & coaching sessions**

The participation in the working groups is limited to a small number of participants

**Register here**

before 21/02/2021

Organised by



With the collaboration of



# E-Technical Workshop

## Designing urban nature-based solutions for greywater reuse

The benefits of implementing a **Nature-Based Solution (NBS)** in an urban environment are manifold. In addition to providing green space, it reintroduces biodiversity, contributes to adaptation to climate change and, above all, is a high-performance and sustainable urban water management tool. In spite of these numerous advantages and the growing interest, NBSs are poorly integrated in strategic and technological decision-making processes.

For this reason, the Centre for Research and Water Technologies - CERTE - (Tunisia), as the partner in the NAWAMED project coordinating the transfer of the know-how to local technicians and decision-makers, organises this e-technical workshop to foster the dissemination and replication of the solutions proposed. In particular, with this technical workshop, the NAWAMED project aims to introduce the technical design aspects that have to be integrated with the urban&local landscape and context.

The workshop will focus on the design of NBSs for the treatment and recycling of greywater, with the support of the technical partner of NAWAMED, IRIDRA. The main objective of the first open session (1<sup>st</sup> of March) is to broadly debate about the use of **urban Nature-Based Solutions for greywater reuse and Sustainable Water Management (SWM)**: technical feasibility, operating rules and the potential performances based on concrete examples of completed or case studies.

After this first session, some selected participants will be divided in **working groups** to analyse the NAWAMED case studies, in order to:

1. Understand the operating principle of **Constructed Wetland (CW)** and **Living Green Wall (LGW)**
2. Analyse a real situation to treat wastewater and propose appropriate reuse options
3. Know the key design parameters and boundary conditions
4. Develop an NBS system: **CW - ground or roof located "Wet Roof" (WR) - LGW** and apply dimensioning and conceptual design

# Agenda / 1 March 2021

## Open session

Moderator: Latifa BOUSSELMI of Centre de Recherche et des Technologies des Eaux, Tunis (CERTE)

Time	Activity /Topic	Speaker
14h - 14h30	Designing urban NBSs for SWM: focus on greywater	<b>Fabio Masi, IRIDRA</b>
14h30 - 14h45	NBS at European level: projects, results and publications	<b>Barbara Sarnari, EuroMediterranean Center for the Sustainable Development - SVI.MED.</b>
14h45 - 15h	ENI CBC MED Programme support to environmental sustainability in the Mediterranean area	<b>Irene Morell Rodríguez, Joint Technical Secretariat (JTS) - ENI CBC MED Programme</b>
15h - 15h40	<b>Sharing experiences about NBS</b>	
	Designing an eco-innovative NBS system as demonstration units for municipal wastewater treatment and reuse: case studies presentation	<b>Konstantinos Plakas, Centre for Research and Technology, Hellas ENI CBC MED AQUACYCLE project</b>
	Circular economy in water management for the Mediterranean islands	<b>Simos Malamis, National Technical University of Athens H2020 HYDROUSA project</b>
15h40 - 16h	Discussion: challenges for wide applications	

# Agenda / 2 March - 8 March

## Working groups on real case studies & coaching sessions

(closed sessions to selected participants)

2 March 2021 - session 2					
14h -14h40	CW: design, implementation, operation and maintenance			<b>Riccardo Bresciani, IRIDRA</b>	
14h40 -15h20	LGW: design, implementation, operation and maintenance			<b>Anacleto Rizzo, IRIDRA</b>	
15h20 -15h40	Discussion			<b>All</b>	
15h40 - 16h	Introduction and quick guide to the process of formulating the working groups and case studies attribution: Group A (CW); Group B (LGW)			<b>Latifa Bouselmi, CERTE</b>	
3 March 2021 - session 3					
14h - 15h	Design parameters of CW and introduction to the Group A case studies		Design parameters of LGW and introduction to the Group B case studies		<b>IRIDRA</b>
15h - 16h	Groups discussion and organization				<b>IRIDRA, with the support of the NAWAMED partners</b>
	Group A1 (CW)	Group A2 (WR)	Group B1 (LGW-1)	Group B2 (LGW-2)	
4 March 2021 - session 4: working groups on real case studies & coaching sessions					
14h - 16h	Working groups on real case studies & coaching sessions				<b>IRIDRA, with the support of the NAWAMED partners</b>
	Group A1 (CW)	Group A2 (WR)	Group B1 (LGW-1)	Group B2 (LGW-2)	

# Agenda / 2 March - 8 March

## Working groups on real case studies & coaching sessions

(closed sessions to selected participants)

5 March 2021 - session 5: working groups on real case studies & coaching sessions					
14h - 16h	Working groups on real case studies & coaching sessions				<b><i>IRIDRA, with the support of the NAWAMED partners</i></b>
	Group A1 (CW)	Group A2 (WR)	Group B1 (LGW-1)	Group B2 (LGW-2)	
8 March 2021 - session 6: working groups' final presentations and discussion					
14h - 14h20	Presentation of Group A1 (CW)				<b><i>All</i></b>
14h20 - 14h40	Presentation of Group A2 (WR)				<b><i>All</i></b>
14h40 - 15h	Presentation of Group B1 (LGW-1)				<b><i>All</i></b>
15h - 15h20	Presentation of Group B2 (LGW-2)				<b><i>All</i></b>
15h20 - 16h	Discussion and assessment of the outcomes of the designs of the 4 case studies  e-TWS evaluation and closure				<b><i>All</i></b>

# NAWAMED CASE-STUDIES

## Group A1 (CW)

*Fabio Masi, IRIDRA*

*Yaser Abunnasr and Thea Maria Maroun, AUB*

The case study concerns implementing a “constructed wetland” (CW) for the treatment and reuse of the greywater produced in university buildings at the American University of Beirut (AUB) AREC Farm in Lebanon. The plant will be located in a rural area, the Bekaa valley, and it will treat the greywater collected from one of the students’ dormitory. The treated water will be stored and sent back to the dormitory for its reuse in toilet flushing.



## Group A2 (WR)

*Riccardo Bresciani, IRIDRA*

*Farah Dawoud, University of Jordan*

The case study concerns implementing a “wet-roof” (WR) for the treatment and reuse of the greywater produced in university buildings at the University of Jordan campus in Amman, in an urban area. The plant, a constructed wetland located in the roof of one of the students’ dormitory, will treat the greywater from the dormitory facilities. The water will be stored and used in the dormitory for toilet flushing or for irrigation in the nearby green areas when needed.



# NAWAMED CASE-STUDIES

## Group B1 (LGW-1)

*Anacleto Rizzo, IRIDRA*  
*Francesco Giunta, SVI.MED.*

The case study concerns implementing a (LGW) for the treatment and reuse of the greywater in a public school in Ferla, Italy. The school enrolls 190 students and is located in a mountain village in Sicily. Using modules anchored to the external walls, the plant will treat the water collected from the school toilet facilities. The water will be stored and sent back to the school for toilet flushing.



## Group B2 (LGW-2)

*Giulio Conte, IRIDRA*  
*Ahmed Ghrabi, CERTE*

The case study concerns implementing a (LGW) for the treatment and reuse of the greywater from the Centre de Recherches et des Technologies des Eaux (CERTE) in Tunisia, in an urbanised area. The plant will treat the water collected from the toilet facilities and store it for toilet flushing. The plant layout will integrate to the building external walls some free-standing elements, for maximising the surface available to host the treating modules.



# Participants' profiles

**After the registrations - [register here](#) - the NAWAMED partners will select the candidates to form a multidisciplinary and international team. The selected candidates will be informed by e-mail.**

The priority will be given to candidates able to constitute 4 working groups composed by professionals with different skills and expertise mainly from the NAWAMED Countries (Italy, Lebanon, Malta, Jordan and Tunisia).

## ***The team will involve the following professionals:***

- Engineer specialised in wastewater treatment
- Ecological engineer/ Catchment systems engineer
- Architect for urban vertical constructions
- Landscape architect
- Urban water manager of public authorities/municipalities, agency, etc.
- Expert/Researcher in water management and wastewater treatment
- Technician working or setting up an NBS in the frame of national or international project

## ***The working groups should include the following expertise:***

1. Basic information on NBS: How does it work? How does it make use and/or get inspired by nature? What kind of NBS is considered for greywater reuse?
2. Wastewater treatment and pollution parameters
3. Local water management principles
4. Technical design skills
5. Architectural and landscape skills for urban areas

**[Register here](#)** before 21/02/2021



## NAWAMED

**NAWAMED project** aims at changing the urban water management and fostering the use of Non-Conventional Water Resources (NCW) thanks to innovative, sustainable and low-cost treatment technologies, to decrease the use of potable water.

### Objective

To increase the adoption of innovative, sustainable and low-cost technologies and measures for the use of non-conventional water resources for domestic purposes.

For more information visit the webpage: <http://www.enicbcmed.eu/projects/nawamed>



For more information about the e-TWS contact CERTE, [nawamed.certe@gmail.com](mailto:nawamed.certe@gmail.com)

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